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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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John G. McDonough

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TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

CHANG, EDITH M

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 08/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/684,886	MCDONOUGH, JOHN G.	
	Examiner	Art Unit	
	Edith M. Chang	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-29 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-11,15,16 and 18-29 is/are rejected.
- 7) ☒ Claim(s) 2-4 and 12-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20050314</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments/Remarks

1. Applicant's arguments filed on March 16, 2005 have been fully considered but they are not persuasive.

Argument: Applicant argues that the demodulating fingers taught by Strich et al. do not receive a plurality of sample streams.

Response: In FIG.10, Strich et al. discloses each demodulating finger (420A to 420C) left side of the block 420 having two arrows as sample stream inputs to accept the plurality of sample streams from R_I and R_Q as *cited in the claims*.

Argument: Applicant argues that there is no suggestion from the prior art to modify the properly combined teaching of the Strich et al. and Chen et al. reference.

Response: Strich et al. discloses a spread spectrum receiver of a multiple antenna system that the output of the Strich et al.'s diversity receiver provides soft symbol output by nature, but does not explicitly specify the well-know in the art soft symbol output of a direct sequence spread spectrum (DSSS) receiver. Chen et al. specify and provide the definition of soft symbol output of a wireless mobile.

Hence, there are suggestions from the prior art, and the providing of the Chen et al.'s teaching is proper.

Argument: Applicant argues that claim 1 and its dependent claims are in fact patentably distinct over the applied references based on the limitations described in the specification.

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Response: The limitations described in the specification are not read into the claims, if they are not recited in the claims.

Claim Objections

2. Claims 2-4 and 12-14 are objected to because of the following informalities:

Claims 2 & 12, line 4: "sample stream input" should be "sample stream inputs".

Claims 3-4 and 13-14 are dependent on the objected claims 2 and 12.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 5-11, 15-16 and 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strich et al. (US 6,473,447 B1) in view of Chen et al. (US 6,728,323 B1).

Regarding **claims 1, 11 & 23**, in FIG. 10 Strich et al. teaches the receiver with multiple demodulators (elements 420A to 420C are demodulating fingers) and its method, comprising:

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A controller (element 418 combined with 415) to select a sample stream from the signal received from the antenna to data demodulators input (elements 420A to 420C) stated in column 14 lines 44-50; and

A plurality of demodulators (elements 420A to 420C) wherein each demodulator (or demodulating finger) has

inputs (the inputs of elements 420A to 420C) receiving the plurality samples streams from R_I and R_Q as shown in FIG. 1, to receive the plurality sample streams from R_I and R_Q of different users in different sectors/coverage areas that the inputs of the left side of elements 420A to 420C receiving the plurality samples streams from R_I and R_Q transmitted via multiple transmitting antennas (antennas 85 to 90 of FIG. 6 & column 14 lines 20-25);

one input (at the bottom of elements 420A to 420Q) connected to the controller (element 418) to receive the commands to select the signal/sample stream associated to each coverage area of a user sectors (column 14 lines 44-50); and

provides the data via digital circuitry 416 comprising deinterleaving and decoding (column 14 lines 35-37).

Strich et al. does not explicitly specify the data as the soft symbol output. However Chen et al. teaches the mobile with deinterleaving and decoding provides soft symbols in FIG. 4, FIG. 5 and column 8 lines 60-62. It is well known in the art that the interleaving/deinterleaving provides the soft symbols, as Strich et al. teaching the deinterleaving the demodulated signals in the digital circuitry (element 416 FIG. 10), at the time of the invention, it would have been obvious to a person of ordinary skill in the

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art to have the process to generate soft symbols taught by Chen et al. in Strich et al.'s digital circuitry to provide soft symbols for the purpose of soft decoding to decode a punctured coded signal (column 3 lines 43-50 & column 4 lines 26-30).

Regarding **claims 5 & 15**, in FIG.2, Stlich et al. teaches that the signals received at the demodulator converted from signals transmitted from different sectors wherein each Spread Spectrum (SS) transmitter transmits the signal via its carrier (column 8 lines 42-45).

Regarding **claim 6**, in FIG.10, Stlich et al. discloses the controller 418 selects a sample stream associated with a coverage area from the plurality of sample streams for each data demodulator block 420 (column 14 lines 44-49).

Regarding **claims 7, 16 & 27**, in FIG.6, Strich et al. teaches the controller assigns the demodulator 420A to the first sample stream came from the first sector, the demodulator 420B and 420C to the second and third sample streams came from the second and third sectors respectively shown in FIG.2.

Regarding **claims 8 & 28**, Strich et al.'s receiver modified with Chen et al.'s teaching teaches receiving a first, second, and third carrier in FIG.10 the antenna receiving signals transmitted from such as three sectors wherein each SS transmitter of the base station (elements 42, 44 and 46) transmits the signal via its carrier (column 8 lines 42-45); the element 412 converting the first carrier to a first sample stream, the second carrier to a second sample stream and the third carrier to a third sample stream to the first demodulator 420A and the second demodulator 420B; and the controller commands the first demodulator 420A select the first stream from one coverage area

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(such as 178 of FIG. 1B) of sector one (the residential sector), the demodulator 4208 selecting the first stream from another coverage area (such as 179 of FIG. 1B) of the same sector one (the same residential sector).

Regarding **claims 9, 10 & 29**, in FIG.6 and column 14 lines 41-45, Strich et al. teaches receiving signals from adjacent coverage areas of a business sector having delay/phase shift (stated in column 14 lines 41-50); in FIG. 1B shows the business sector having adjacent coverage areas U2, 173 and 1734 with a carrier transmitted by one sector transmitter (as shown in FIG.2). The controller assigns the three signals with the first delay from the adjacent coverage area U2, with the second delay from the 173 and the third delay from the 174 of the business sector to three demodulators, wherein the business sector bears one carrier.

Regarding **claims 18-21**, in FIG. 1, FIG.2 & FIG. 10, Strich et al. teaches receiving signals in the cellular CDMA systems (column 3 lines 18-25), it is well known that the CDMA signal comprising channels spreaded by the wash code (the wash code distinguishes the channel), hence the Strich et al.'s receiver modified with Chen et al.'s teachings teaches providing soft symbols from the selected spreaded information channel by despread the channel information with the wash code.

Regarding **claim 22**, Stlich et al. teaches selecting each sample stream from the different users in different sectors/coverage area (FIG.1) from multiple transmitting antennas (antennas 85 to 90 of FIG.6 & column 14 lines 20-25) and providing soft symbols from the selected stream.

Regarding claims **24-25**, in FIG. 10, Strich et al. modified with Chen et al.'s teaching teaches the controller (element 418) communicating selection commands to each demodulating finger (elements 420), each demodulator accepts sample streams from the receiver 412, and provides the soft symbols from the sample streams via digital circuitry 416 comprising deinterleaving and decoding the soft symbols (column 14 lines 35-37).

Regarding **claim 26**, in FIG.2, Strich et al. teaches that the signals received at the demodulator converted from signals transmitted from such as three sectors wherein each SS transmitter (elements 42, 44 and 46) transmits the signal via its carrier (column 8 lines 42-45), hence there are three sample streams each with its carrier. In FIG. 10, the analog receiver (412 FIG.10) converts each carrier to a sample stream in the received signals.

Allowable Subject Matter

5. Claims 2-4 and 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcome the objections listed in the claim objections paragraph.

6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a demodulating finger and its method in a direct sequence spread

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spectrum (DSSS) communications receiver as a whole, the combination of elements and features, which includes a plurality of demodulating fingers, each demodulating finger of a plurality of demodulating fingers having sample stream inputs to accept a plurality of sample streams and a selection input connected to a controller output to accept sample stream selection command. Each demodulating finger includes a multiplexer having plurality of inputs connected to the sample stream inputs to accept the plurality of sample streams and a select input connected to the selection input to accept the sample stream selection command to provide the selected sample stream to the demodulating finger for demodulating information channels in the plurality of sample streams.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
July 27, 2005


YOUNG T. TSE
PRIMARY EXAMINER